

Appl. No. 09/560,819

Art Unit 2879

September 23, 2003

Reply to Office Action of April 23, 2003

**REMARKS**

Applicant respectfully requests the Examiner to reconsider the present application in view of the foregoing amendments to the claims.

Claims 1, 3-8 and 10-13 are pending in the present application. Claim 13 is objected to as being dependent upon a rejected base claim but would be allowable if properly rewritten into independent form.

In the present amendment, claim 9 has been canceled and claims 1, 3-8 and 11 have been amended. No new matter has been added by way of the amendment to claim 1 since claim 1 merely incorporates the subject matter of canceled claim 9 (see also page 17 of the present specification). The amendments to claims 3-8 and 11 are editorial in nature (*i.e.*, for proper antecedent basis), and do not add any new matter. These are obviously clarifying and not narrowing amendments in any respect. Thus, Applicant reserves the right to pursue any equivalent of the claimed features of the instantly pending claims.

Based upon the above considerations, entry of the present amendment is respectfully requested.

Applicant's previous remarks have been considered but rendered moot (see page 6 of the Office Action). Thus, in view of the following remarks, Applicant respectfully requests that the Examiner withdraw all rejections and allow the currently pending claims.

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**Issues Under 35 U.S.C. § 102(b)**

Claims 1, 3, 5, 7, 8, 9 and 11 stand rejected under 35 U.S.C. § 102(b) as being unpatentable over Umemoto *et al.* (U.S. Patent No. 4,979,200; hereinafter "Umemoto '200"). Applicant respectfully traverses.

The features of the Umemoto '200 reference are discussed at pages 2-3 of the Office Action. However, Umemoto '200 fails to disclose a radiation image conversion panel and the thermo-compression as instantly claimed. The radiation image conversion panel of the present invention is produced by thermo-compressing at least two sheets that have been separately coated and dried.

Because "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference," the cited Umemoto '200 reference cannot be a basis for a rejection under § 102(b). See *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Thus, because of the lack of disclosure of all features as instantly claimed, the rejection in view of Umemoto '200 is overcome. Reconsideration and withdrawal are respectfully requested.

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**Issues under 35 U.S.C. § 103(a)**

Claims 4, 10 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Umemoto '200 in view of Takasu et al. (U.S. Patent No. 5,519,228; hereinafter "Takasu '228"). Also, claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Umemoto '200 in view of Doms et al. (U.S. Patent No. 5,789,021; hereinafter "Doms '021"). Applicant respectfully traverses for the following reasons.

The Present Invention and Its Unexpected Advantages

The present invention relates to a radiation image conversion panel comprising at least two phosphor layers each containing a stimuable phosphor and a binder, wherein an amount (by weight) of the binder to the stimuable phosphor in uppermost phosphor layer of the phosphor layers is greater than that of the binder to the stimuable phosphor in any other phosphor layers by at least 0.5 wt%. Also, the claimed radiation image conversion panel is produced by thermo-compressing at least two sheets that have been separately coated and dried.

With the present invention, a binder/phosphor ratio in each layer can be independently controlled. The present invention even displays WET on WET and WET on DRY capability. This is in contrast to the conventional processes (i.e., the WET on WET process (wherein several layers are coated simultaneously) and the WET on DRY process (wherein

another layer is coated on a dried layer), wherein the binder in a layer can migrate to a next layer. With those conventional processes, controlling the binder/phosphor ratio in each layer is much more difficult.

Thus, the present invention has unexpectedly achieved the improved immobilization of the binder between the layers and allowing the binder/phosphor ratio to be easily controlled. Another unexpected advantage of the present invention is that a phosphor layer with a great filling factor can be made (see page 21, line 17 of the present specification).

The claimed radiation image conversion panel achieves greater density of stimuable phosphor in the phosphor layer as compared to conventional radiation image conversion panels. The present invention has achieved a radiation image conversion panel having excellent emission of a sufficient quantity of light. Also, the claimed radiation image conversion panel has improved levels of graininess, noise and the desired S/N ratio (also, see the present specification at page 5, line 20 to page 6, line 4).

Other embodiments of the present invention include the different amount of binder to stimuable phosphor in the uppermost phosphor layer (i.e., see claim 3), phosphor type (claim 5), varying the thickness of a phosphor layer (each of claims 10-13), the binder as a thermoplastic

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elastomer (claim 7), and the grain size of the stimuable phosphor (claim 6).

In contrast to the present invention, the cited combinations of references fails to disclose all features and advantages of the present invention.

#### Distinctions over the Cited Combinations of References

Applicant respectfully submits that the cited references have been improperly combined, and that not all requirements for a *prima facie* case of obviousness have been satisfied.

The cited combinations of references fail to disclose all features as instantly claimed. As mentioned, the cited Umemoto '200 reference fails to disclose thermo-compressing at least two sheets that have been separately coated and dried as instantly claimed. The other cited references do not account for this deficiency. Thus, the requirement of disclosure of all claimed features for a *prima facie* case of obviousness has not been satisfied. Thus, these rejections under § 103(a) are overcome.

Applicant also submits that the requisite motivation and/or reasonable expectation of success are lacking. When compared to the present invention, Umemoto '200 uses a different bonding method to make a different radiation image conversion panel. Further, the cited secondary references of Takasu '228 and Doods '021 do not account for

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the deficiencies of Umemoto '200, nor would one of ordinary skill in the art know how to proceed in making the present invention based on these references since the cited references fail to disclose the proper bonding method to make the claimed radiation image conversion panel.

Instead, the cited primary reference of Umemoto '200 discloses phosphor particles that automatically settle during the disclosed process, thereby forming sedimentation. With such accumulation, the Umemoto '200 method results in a higher binder ratio in an upper layer, making it is very difficult to control the binder/phosphor ratio in each layer. This leads to inferior results and is in contrast to the features and advantages of the present invention.

In the present invention, the thermo-compression bonding leads to a reflective layer that forms on the support. Also, the phosphor sheets completely bond by fusion to each other. As explained in Applicant's present specification (see page 21, lines 13-18), thermo-compression bonding leads to a decrease in the thickness of the phosphor layer by about 25%, while increasing the filling factor of the phosphor. With the present invention, a sharper image will be produced because the better phosphor layer (which is thinner and has improved filling) reduces any blurriness in the produced image.

In contrast to the present invention, the Umemoto '200 process does not use thermo-compression bonding. As mentioned, Umemoto '200 discloses phosphor particles that accumulate, which results in a higher binder

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ratio in an upper layer (i.e., inferior production of an image). Further, the cited secondary references do not account for the deficiencies of Umemoto '200. Nothing in Takasu '228 or Doms '021 gives any "clear and particular" guidance for one of ordinary skill in the art to achieve the present invention. Applicant respectfully submits that while a cited reference need not expressly teach that the disclosure contained therein should be combined with another, *see Motorola, Inc. v. Interdigital Tech. Corp.*, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997), the showing of combining references "must be clear and particular". *See In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Here, there is no clear and particular guidance in any of the three cited references to achieve the formulations as presently claimed.

In fact, Applicant respectfully submits that the disclosed method in Umemoto '200 (or when combined with the other references) cannot produce the unexpected results of the present invention. As mentioned, the present invention has unexpectedly achieved the improved immobilization of the binder between the layers (allowing better control of the binder/phosphor ratio), greater density of stimuable phosphor in the phosphor layer, and a radiation image conversion panel having excellent emission, reduced graininess, noise and the desired S/N ratios. Accordingly, Applicant respectfully requests that the USPTO reconsider the patentability of the present invention with regard to

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these unexpected results since the existence of unexpected results rebuts any asserted *prima facie* case of obviousness.

Thus, the present invention is patentably distinct from the cited combinations of references. First, the cited references fail to disclose all features as instantly claimed. Second, one of ordinary skill in the art would not be motivated or reasonably expect to be successful in making the present invention since the cited references fail to disclose the unexpected advantages and the bonding method of the present invention. Accordingly, Applicant respectfully requests the Examiner to reconsider, and to withdraw all rejections and allow the currently pending claims.

#### **Conclusion**

A full and complete response has been made to all issues as cited in the Office Action. Applicants have taken substantial steps in efforts to advance prosecution of the present application. Thus, Applicants respectfully request that a timely Notice of Allowance issue for the present case.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Eugene T. Perez (Reg. No. 48,501) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.



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Pursuant to 37 C.F.R. § 1.17 and 1.136(a), Applicants respectfully petition for a two (2) month extension of time for filing a response in connection with the present application. The required fee of \$410.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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